

WHAT IS CLAIMED IS

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1.

An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;  
and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing.

2. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;  
and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switch

ing said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel.

3. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;

and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing means has a capturing mode in which a field of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided field to capture the image data of the plural television cameras into one field in a multiplexing form.

4. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras; and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel and has a capturing mode in which a field of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided field to capture the image data of the plural television cameras into one field in a multiplexing form.

5. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;

and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing means has a capturing mode in which one scanning line of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided scanning line to capture the image data of the plural television cameras onto one scanning line in a multiplexing form.

6. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;

and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras

ras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel and has a capturing mode in which one scanning line of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided scanning line to capture the image data of the plural television cameras onto one scanning line in a multiplexing form.

7. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;

and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing,

and further wherein

the image data capturing by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means.

8. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two

or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;  
and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel,

and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means.

9. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of the television cameras;

and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing means has a capturing mode in which a field of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided field to capture the image data of the plural television cameras into one field in a multiplexing form, and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means.

10. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of the television cameras, and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from the television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which t

he image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel and has a capturing mode in which a field of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided field to capture the image data of the plural television cameras into one field in a multiplexing form, and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means.

11. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of the television cameras;

and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing means has a capturing mode in which one scanning line of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided scanning line to capture the image data of the plural te



levision cameras onto one scanning line in a multiplexing form,  
and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means.

12. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of the television cameras;  
and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel and has a capturing mode in which one scanning line of the respective television camera is divided into two or more so that the desired tele

vision camera is assigned to the respective divided scanning line to capture the image data of the plural television cameras onto one scanning line in a multiplexing form,  
and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means.

13. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of the television cameras;  
and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing,  
and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means,  
and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means.

14. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatic

ally controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras; and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel, and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means.

15. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatic

ally controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;  
and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing means has a capturing mode in which a field of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided field to capture the image data of the plural television cameras into one field in a multiplexing form,  
and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means.

16. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;  
and wherein

said image capturing means has two or more different capturing mo

des regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel and has a capturing mode in which a field of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided field to capture the image data of the plural television cameras into one field in a multiplexing form, and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means.

17. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing o

nly desired image data from each of said television cameras;  
and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing means has a capturing mode in which one scanning line of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided scanning line to capture the image data of the plural television cameras onto one scanning line in a multiplexing form, and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means.

18. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;  
and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data c

an be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel and has a capturing mode in which one scanning line of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided scanning line to capture the image data of the plural television cameras onto one scanning line in a multiplexing form, and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means.

19. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;

and wherein

said image capturing means has two or more different capturing mo

des regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means, and said transfer modes can automatically be switched in synchronous with or independently from the progress of the image processing.

20. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras; and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by suc



cessively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras can be captured by successively switching said television cameras from pixel to pixel,

and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means, and said transfer modes can automatically be switched in synchronous with or independently from the progress of the image processing.

21. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;  
and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said image capturing means has a capturing mode in which a field of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided field to capture the image data of the plural television cameras into one field in a multiplexing form,

and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means, and said transfer modes can automatically be switched in synchronous with or independently from the progress of the image processing.

22. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;

and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras c

an be captured by successively switching said television cameras from pixel to pixel and has a capturing mode in which a field of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided field to capture the image data of the plural television cameras into one field in a multiplexing form, and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means, and said transfer modes can automatically be switched in synchronous with or independently from the progress of the image processing.

23. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras; and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said image capturing means has a capturing mode in which one scanning line of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided scanning line to capture the image data of the plural television cameras onto one scanning line in a multiplexing form,

and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means, and said transfer modes can automatically be switched in synchronous with or independently from the progress of the image processing.

24. An optical fiber observing image processing apparatus in which positioning of optical axes and end faces of optical fibers can be automatically controlled by capturing and processing image data of the optical fibers photo-taken by television cameras, comprising:

an image capturing means capable of capturing image data from two or more television cameras and capable of capturing and image-processing only desired image data from each of said television cameras;

and wherein

said image capturing means has two or more different capturing modes regarding the capturing of the image data, and said capturing modes can automatically be switched in synchronous with or independently from progress of the image processing, and said capturing modes of said image capturing means include at least two of a capturing mode in which the image data can be captured from said television cameras from frame to frame and the image data from said television cameras can be captured by successively switching said television cameras from frame to frame, a capturing mode in which the image data can be captured from said television cameras from field to field and the image data from said television cameras can be captured by successively switching said television cameras from field to field and a capturing mode in which the image data can be captured from said television cameras from pixel to pixel and the image data from said television cameras ca

n be captured by successively switching said television cameras from pixel to pixel and has a capturing mode in which one scanning line of the respective television camera is divided into two or more so that the desired television camera is assigned to the respective divided scanning line to capture the image data of the plural television cameras onto one scanning line in a multiplexing form,  
and further wherein

the image data captured by said image capturing means can be outputted onto a television monitor and the like through a scanning converting means, and at least two different transfer modes are provided for transferring of the image data between said image capturing means and said scanning converting means, and said transfer modes can automatically be switched in synchronous with or independently from the progress of the image processing.

25. <sup>claim 1</sup> An optical fiber observing image processing apparatus according to ~~any one of claims 1 to 24,~~ further comprising a delay means capable of setting a desired delay time for image data.